

# SEQUENCE LISTING

<110> Cases, Sylvaine  
Stone, Scot  
Zhou, Ping  
Farese, Robert V.  
Chi-Liang Eric 'Yen

<120> MONO- AND DIACYGLYCEROL ACYLTRANSFERASES AND METHODS OF USE THEREOF

<130> UCAL240CIP

<140> Unassigned

<141> 2002-01-14

<150> 60/271,307

<151> 2001-02-23

<150> 09/794,715

<151> 2001-02-26

<160> 18

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1231

<212> DNA

<213> Homo sapiens

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aggtggcagg	aggtcacagt	gggtccgaaa	ctgggctgtg	tggcgctact	ttcgagacta	420
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 <212> PRT  
 <213> Homo sapiens

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 35 40 45  
 Ala Leu Gln Asp Leu Phe Ser Val Thr Trp Leu Asn Arg Ser Lys Val  
 50 55 60  
 Glu Lys Gln Leu Gln Val Ile Ser Val Leu Gln Trp Val Leu Ser Phe  
 65 70 75 80  
 Leu Val Leu Gly Val Ala Cys Ser Ala Ile Leu Met Tyr Ile Phe Cys  
 85 90 95  
 Thr Asp Cys Trp Leu Ile Ala Val Leu Tyr Phe Thr Trp Leu Val Phe  
 100 105 110  
 Asp Trp Asn Thr Pro Lys Lys Gly Gly Arg Arg Ser Gln Trp Val Arg  
 115 120 125  
 Asn Trp Ala Val Trp Arg Tyr Phe Arg Asp Tyr Phe Pro Ile Gln Leu  
 130 135 140  
 Val Lys Thr His Asn Leu Leu Thr Thr Arg Asn Tyr Ile Phe Gly Tyr  
 145 150 155 160  
 His Pro His Gly Ile Met Gly Leu Gly Ala Phe Cys Asn Phe Ser Thr  
 165 170 175  
 Glu Ala Thr Glu Val Ser Lys Lys Phe Pro Gly Ile Arg Pro Tyr Leu  
 180 185 190  
 Ala Thr Leu Ala Gly Asn Phe Arg Met Pro Val Leu Arg Glu Tyr Leu  
 195 200 205  
 Met Ser Gly Gly Ile Cys Pro Val Ser Arg Asp Thr Ile Asp Tyr Leu  
 210 215 220  
 Leu Ser Lys Asn Gly Ser Gly Asn Ala Ile Ile Ile Val Val Gly Gly  
 225 230 235 240  
 Ala Ala Glu Ser Leu Ser Ser Met Pro Gly Lys Asn Ala Val Thr Leu  
 245 250 255  
 Arg Asn Arg Lys Gly Phe Val Lys Leu Ala Leu Arg His Gly Ala Asp  
 260 265 270  
 Leu Val Pro Ile Tyr Ser Phe Gly Glu Asn Glu Val Tyr Lys Gln Val  
 275 280 285  
 Ile Phe Glu Glu Gly Ser Trp Gly Arg Trp Val Gln Lys Lys Phe Gln  
 290 295 300  
 Lys Tyr Ile Gly Phe Ala Pro Cys Ile Phe His Gly Arg Gly Leu Phe  
 305 310 315 320  
 Ser Ser Asp Thr Trp Gly Leu Val Pro Tyr Ser Lys Pro Ile Thr Thr

325 330 335  
 Val Val Gly Glu Pro Ile Thr Ile Pro Lys Leu Glu His Pro Thr Gln  
 340 345 350  
 Gln Asp Ile Asp Leu Tyr His Thr Met Tyr Met Glu Ala Leu Val Lys  
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<220>  
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 ggcactggct ccagcatcct ctacgccctc caagacatct tctctgtcac ctggctcaac 180  
 agatcyaagg tggaaaaaca gctgcaggtc atctcagtac tacaatgggt cctatccttc 240  
 ctggtgctag gagtggcctg cagtgtcatc ctcatgtaca ccttctgcac agactgctgg 300  
 ctgatagctg tgcctactt cacctggctg gcatttgact ggaacacgcc caagaaaggt 360  
 ggcaggagat cgcagtgggt gcgaaactgg gccgtgtggc gctacttccg agactacttt 420  
 cccatccagc tggatgaagc acacaacctg ctgaccacca ggaactatat ctttggatac 480  
 ccccccatg gcacatcggg cctgggtgcc ttctgttaact tcagcacaga ggctactgaa 540  
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 atagactact tgcctccaa gaatgggagt ggcaatgcta tcacatcgt ggtgggaggt 720  
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 gagaatgagg tatacaagca ggtgatcttt gaggagggtt cctggggccg atgggtccag 900  
 aagaagttcc agaagtatat tggtttcgcc ccctgcacat tccatggccg aggcctcttc 960  
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 cccatcactg tccccagct ggagcaccgc acccagaaag acatcgacct gtaccatgcc 1080  
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 <211> 387  
 <212> PRT  
 <213> Mus musculus

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Ala	Leu	Gln	Asp	Ile	Phe	Ser	Val	Thr	Trp	Leu	Asn	Arg	Ser	Lys	Val
	50					55					60				
Glu	Lys	Gln	Leu	Gln	Val	Ile	Ser	Val	Leu	Gln	Trp	Val	Leu	Ser	Phe
65					70					75					80
Leu	Val	Leu	Gly	Val	Ala	Cys	Ser	Val	Ile	Leu	Met	Tyr	Thr	Phe	Cys
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Thr	Asp	Cys	Trp	Leu	Ile	Ala	Val	Leu	Tyr	Phe	Thr	Trp	Leu	Ala	Phe
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Asp	Trp	Asn	Thr	Pro	Lys	Lys	Gly	Gly	Arg	Arg	Ser	Gln	Trp	Val	Arg
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Asn	Trp	Ala	Val	Trp	Arg	Tyr	Phe	Arg	Asp	Tyr	Phe	Pro	Ile	Gln	Leu
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Val	Lys	Thr	His	Asn	Leu	Leu	Thr	Thr	Arg	Asn	Tyr	Ile	Phe	Gly	Tyr
145					150					155					160
His	Pro	His	Gly	Ile	Met	Gly	Leu	Gly	Ala	Phe	Cys	Asn	Phe	Ser	Thr
				165					170					175	
Glu	Ala	Thr	Glu	Val	Ser	Lys	Lys	Phe	Pro	Gly	Ile	Arg	Pro	Tyr	Leu
			180					185					190		
Ala	Thr	Leu	Ala	Gly	Asn	Phe	Arg	Met	Pro	Val	Leu	Arg	Glu	Tyr	Leu
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		210				215					220				
Leu	Ser	Lys	Asn	Gly	Ser	Gly	Asn	Ala	Ile	Ile	Ile	Val	Val	Gly	Gly
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Ala	Ala	Glu	Ser	Leu	Ser	Ser	Met	Pro	Gly	Lys	Asn	Ala	Val	Thr	Leu
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Lys	Asn	Arg	Lys	Gly	Phe	Val	Lys	Leu	Ala	Leu	Arg	His	Gly	Ala	Asp
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		275					280					285			
Ile	Phe	Glu	Glu	Gly	Ser	Trp	Gly	Arg	Trp	Val	Lys	Lys	Phe	Gln	Lys
		290				295					300				
Tyr	Ile	Gly	Phe	Ala	Pro	Cys	Ile	Phe	His	Gly	Arg	Gly	Leu	Phe	Ser
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Ser	Asp	Thr	Trp	Gly	Leu	Val	Pro	Tyr	Ser	Lys	Pro	Ile	Thr	Thr	Val
				325					330					335	
Val	Gly	Glu	Pro	Ile	Thr	Val	Pro	Lys	Leu	Glu	His	Pro	Thr	Gln	Lys
			340					345					350		
Asp	Ile	Asp	Leu	Tyr	His	Ala	Met	Tyr	Met	Glu	Ala	Leu	Val	Lys	Leu
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<211> 1008
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<213> Mus musculus

<400> 5

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gactggagaa cccagagca aggaggcaga agatggaact gggtcctaaag ctggcctgtg     240
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ggtcacaatt atatatttgg gtttcaccct catggaatat tctgacctgg agcctttgga     360
aatttttgta caaaatactc ggacttcaag aagctatttc ctggctttac atcgtatctc     420
cacgtggcca agatctgggt ctgtttcccg ttgttccgag aatatctgat gagtaacggg     480
ccggtttcag tgtctaagga gagtttgtct catgtgctga gcaaggatgg aggtggcaat     540
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atctacactg ttgttggcgg ccctatccct gttcagcaga ttctgaaccc gacctcagag     900
cagattgaag agctgcatca gacataccta gaggagctaa agaaactatt caatgaacac     960
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<210> 6

<211> 335

<212> PRT

<213> Mus musculus

<400> 6

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      20           25           30
Gln Val Cys Ile Gly Ile Met Val Met Leu Val Leu Tyr Asn Tyr Trp
      35           40           45
Phe Leu Tyr Ile Pro Tyr Leu Val Trp Phe Tyr Tyr Asp Trp Arg Thr
      50           55           60
Pro Glu Gln Gly Gly Arg Arg Trp Asn Trp Val Gln Ser Trp Pro Val
65           70           75           80
Trp Lys Tyr Phe Lys Glu Tyr Phe Pro Ile Cys Leu Val Lys Thr Gln
      85           90           95
Asp Leu Asp Pro Gly His Asn Tyr Ile Phe Gly Phe His Pro His Gly
      100          105          110
Ile Phe Val Pro Gly Ala Phe Gly Asn Phe Cys Thr Lys Tyr Ser Asp
      115          120          125
Phe Lys Lys Leu Phe Pro Gly Phe Thr Ser Tyr Leu His Val Ala Lys
      130          135          140
Ile Trp Phe Cys Phe Pro Leu Phe Arg Glu Tyr Leu Met Ser Asn Gly
145          150          155          160
Pro Val Ser Val Ser Lys Glu Ser Leu Ser His Val Leu Ser Lys Asp
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Gly Gly Gly Asn Val Ser Ile Ile Val Leu Gly Gly Ala Lys Glu Ala
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Leu Glu Ala His Pro Gly Thr Phe Thr Leu Cys Ile Arg Gln Arg Lys  
 195 200 205  
 Gly Phe Val Lys Met Ala Leu Thr His Gly Ala Ser Leu Val Pro Val  
 210 215 220  
 Phe Ser Phe Gly Glu Asn Asp Leu Tyr Lys Gln Ile Asn Asn Pro Lys  
 225 230 235 240  
 Gly Ser Trp Leu Arg Thr Ile Gln Asp Ala Met Tyr Asp Ser Met Gly  
 245 250 255  
 Val Ala Leu Pro Leu Ile Tyr Ala Arg Gly Ile Phe Gln His Tyr Phe  
 260 265 270  
 Gly Ile Met Pro Tyr Arg Lys Leu Ile Tyr Thr Val Val Gly Arg Pro  
 275 280 285  
 Ile Pro Val Gln Gln Ile Leu Asn Pro Thr Ser Glu Gln Ile Glu Glu  
 290 295 300  
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 <211> 1129  
 <212> DNA  
 <213> Homo sapiens

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 aagaaaagtg tgtctacat ggtaagcaag gagggaggtg gaaacatctc tgtcattgtc 600  
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 ggccgcccga tccctgttcg tcagactctg aaccgaccc aggagcagat tgaggagtta 960  
 catcagacct atatggagga acttaggaaa ttgtttgagg aacacaaagg aaagtatggc 1020  
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<210> 8  
 <211> 334  
 <212> PRT  
 <213> Homo sapiens

<400> 8



<223> n = A,T,C or G

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tgtcaccttc agagaactac atcatggggg tccaccccat nggtctcctg accttcggtg	360
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<211> 229

<212> PRT

<213> Mus musculus

<400> 10

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Leu	Phe	Thr	Pro	Leu	Trp	Pro	Leu	Pro	Thr	Val	Tyr	Phe	Val	Trp	Leu
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Leu	Leu	Asp	Trp	Lys	Thr	Pro	Asp	Lys	Gly	Gly	Arg	Arg	Ser	Asp	Trp
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Val	Arg	Asn	Trp	Asn	Val	Trp	Asn	His	Ile	Arg	Asp	Tyr	Phe	Pro	Ile
65				70						75				80	
Thr	Ile	Leu	Lys	Thr	Lys	Asp	Leu	Ser	Pro	Ser	Glu	Asn	Tyr	Ile	Met
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Cys	Thr	Glu	Ala	Thr	Gly	Phe	Ser	Lys	Thr	Phe	Pro	Gly	Ile	Thr	Pro
		115					120					125			
His	Leu	Ala	Thr	Leu	Ser	Trp	Phe	Phe	Lys	Ile	Pro	Ile	Ile	Arg	Asp
	130					135					140				
Tyr	Ile	Met	Ala	Lys	Gly	Leu	Cys	Ser	Val	Ser	Gln	Ala	Ser	Ile	Asp
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Tyr	Leu	Leu	Ser	His	Gly	Thr	Gly	Asn	Leu	Val	Gly	Ile	Pro	Ile	Ile
			165					170						175	
Thr	Val	Val	Gly	Glu	Ala	Leu	Pro	Leu	Pro	Gln	Val	Lys	Asn	Pro	Ser
			180					185					190		
Pro	Glu	Ile	Val	Asp	Lys	Tyr	His	Ala	Leu	Tyr	Met	Asp	Ala	Leu	Tyr
	195					200						205			
Lys	Leu	Phe	Glu	Gln	His	Lys	Val	Gln	Tyr	Gly	Cys	Ser	Asn	Thr	Gln
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Lys	Leu	Ile	Phe	Leu											
225															

<210> 11

<211> 1240



<212> DNA  
<213> Homo sapiens

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gttttgcaat ggatcccagt ctatatattt ttagtttgga tcttgccagcc attgttcgtc 180  
tacctgctgt ttacatcctt gtggccgcta ccagtgtctt actttgcctg gttgttcctg 240  
gactggaaga cccagagcg aggtggcagg cgttcggcct gggtaaggaa ctggtgtgtc 300  
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aatcggccca ttaccactgt tgttggggaa ccccttccaa tcccaggat taagaggcca 960  
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gagccacatt cccattgat caacccccaa agccatgagg gatccaagta gagccacaga 1140  
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<210> 12  
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<212> PRT  
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Gln Pro Leu Phe Val Tyr Leu Leu Phe Thr Ser Leu Trp Pro Leu Pro  
35 40 45  
Val Leu Tyr Phe Ala Trp Leu Phe Leu Asp Trp Lys Thr Pro Glu Arg  
50 55 60  
Gly Gly Arg Arg Ser Ala Trp Val Arg Asn Trp Cys Val Trp Thr His  
65 70 75 80  
Ile Arg Asp Tyr Phe Pro Ile Thr Ile Leu Lys Thr Lys Asp Leu Ser  
85 90 95  
Pro Glu His Asn Tyr Leu Met Gly Val His Pro His Gly Leu Leu Thr  
100 105 110  
Phe Gly Ala Phe Cys Asn Phe Cys Thr Glu Ala Thr Gly Phe Ser Lys  
115 120 125  
Thr Phe Pro Gly Ile Thr Pro His Leu Ala Thr Leu Ser Trp Phe Phe  
130 135 140  
Lys Ile Pro Phe Val Arg Glu Tyr Leu Met Ala Lys Gly Val Cys Ser

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Val Ser Gln Pro Ala Ile Asn Tyr Leu Leu Ser His Gly Thr Gly Asn			
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Leu Val Gly Ile Val Val Gly Gly Val Gly Glu Ala Leu Gln Ser Val			
	180	185	190
Pro Asn Thr Thr Thr Leu Ile Leu Gln Lys Arg Lys Gly Phe Val Arg			
	195	200	205
Thr Ala Leu Gln His Gly Ala Tyr Leu Val Pro Ser Tyr Ser Phe Gly			
	210	215	220
Glu Asn Glu Val Phe Asn Gln Glu Thr Phe Pro Glu Gly Thr Trp Leu			
225	230	235	240
Arg Leu Phe Gln Lys Thr Phe Gln Asp Thr Phe Lys Lys Ile Leu Gly			
	245	250	255
Leu Asn Phe Cys Thr Phe His Gly Arg Gly Phe Thr Arg Gly Ser Trp			
	260	265	270
Gly Phe Leu Pro Phe Asn Arg Pro Ile Thr Thr Val Val Gly Glu Pro			
	275	280	285
Leu Pro Ile Pro Arg Ile Lys Arg Pro Asn Gln Lys Thr Val Asp Lys			
	290	295	300
Tyr His Ala Leu Tyr Ile Ser Ala Leu Arg Lys Leu Phe Asp Gln His			
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Lys Val Glu Tyr Gly Leu Pro Glu Thr Gln Glu Leu Thr Ile Thr			
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 <212> DNA  
 <213> Homo sapiens

<400> 13

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Ile Ala Val Asn Leu Tyr Leu Val Val Phe Thr Pro Tyr Trp Pro Val
          35          40          45
Thr Val Leu Ile Leu Thr Trp Leu Ala Phe Asp Trp Lys Thr Pro Gln
          50          55          60
Arg Gly Gly Arg Arg Phe Thr Cys Val Arg His Trp Arg Leu Trp Lys
65          70          75          80
His Tyr Ser Asp Tyr Phe Pro Leu Lys Leu Leu Lys Thr His Asp Ile
          85          90          95
Cys Pro Ser Arg Asn Tyr Ile Leu Val Cys His Pro His Gly Leu Phe
          100          105          110
Ala His Gly Trp Phe Gly His Phe Ala Thr Glu Ala Ser Gly Phe Ser
          115          120          125
Lys Ile Phe Pro Gly Ile Thr Pro Tyr Ile Leu Thr Leu Gly Ala Phe
          130          135          140
Phe Trp Met Pro Phe Leu Arg Glu Tyr Val Met Ser Thr Gly Ala Cys
145          150          155          160
Ser Val Ser Arg Ser Ser Ile Asp Phe Leu Leu Thr His Lys Gly Thr
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Gly Asn Met Val Ile Val Val Ile Gly Gly Leu Ala Glu Cys Arg Tyr
          180          185          190
Ser Leu Pro Gly Ser Ser Thr Leu Val Leu Lys Asn Arg Ser Gly Phe
          195          200          205
Val Arg Met Ala Leu Gln His Gly Val Pro Leu Ile Pro Ala Tyr Ala
          210          215          220
Phe Gly Glu Thr Asp Leu Tyr Asp Gln His Ile Phe Thr Pro Gly Gly
225          230          235          240
Phe Val Asn Arg Phe Gln Lys Trp Phe Gln Ser Met Val His Ile Tyr
          245          250          255
Pro Cys Ala Phe Tyr Gly Arg Gly Phe Thr Lys Asn Ser Trp Gly Leu

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260 265 270  
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 Met Pro Lys Ile Glu Asn Pro Ser Gln Glu Ile Val Ala Lys Tyr His  
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 <211> 1050  
 <212> DNA  
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 35 40 45  
 Leu Thr Val Leu Tyr Ala Ala Trp Trp Tyr Leu Asp Arg Asp Lys Pro  
 50 55 60  
 Arg Gln Gly Gly Arg His Ile Gln Ala Ile Arg Cys Trp Thr Ile Trp  
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Trp	Phe	Arg	Ala	Pro	Phe	Phe	Arg	Asp	Tyr	Ile	Met	Ser	Ala	Gly	Leu	
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Asp	Ala	Arg	Pro	Gly	Ser	Phe	Thr	Leu	Leu	Leu	Arg	Asn	Arg	Lys	Gly	
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Phe	Val	Arg	Leu	Ala	Leu	Thr	His	Gly	Ala	Pro	Leu	Val	Pro	Ile	Phe	
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Ser	Phe	Gly	Glu	Asn	Asp	Leu	Phe	Asp	Gln	Ile	Pro	Asn	Ser	Ser	Gly	
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Gln	His	Tyr	Ile	Lys	Glu	Leu	Cys	Asn	Leu	Phe	Glu	Ala	His	Lys	Leu	
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<210> 18  
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<400> 18

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